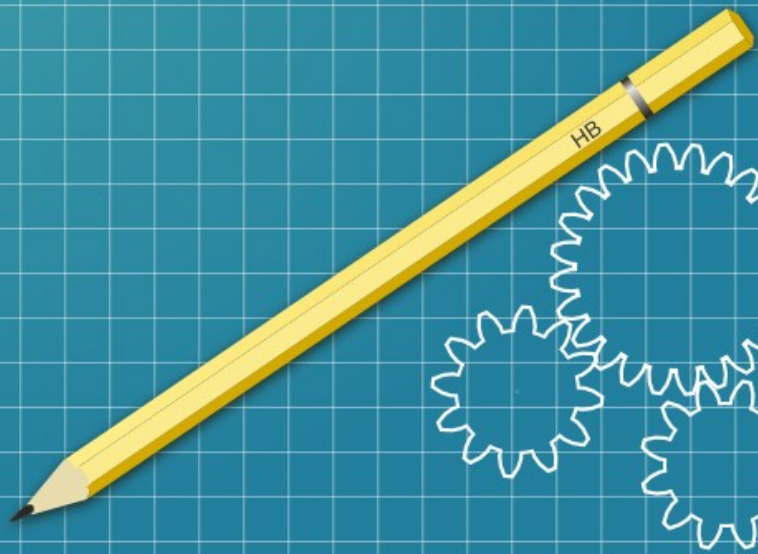
An Introduction To The Linux.



Contents

4. Unix and Windows differences in structure and function. Ultimately Windows and Linux compared.

5. Ways to make use of linux. Single OS on computer, dual booting Linux with other OSes like Windows or creating Virtual Versions of the same e.g having virtual linux in Windows machine or hosting a different distro in a linux machine.

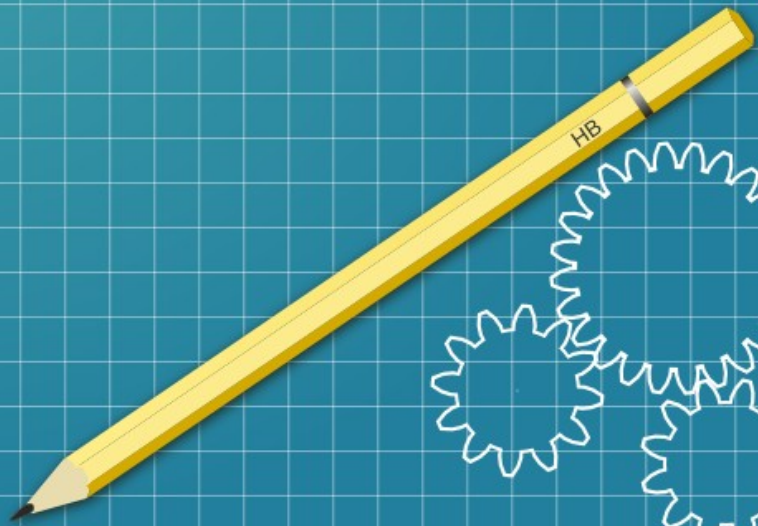
6. Security and Goodwill-The case for Linux. Systems of global distribution and merchandising.

7. Possibilities for mobile, communities, collaboration and development.
8. My favorite Linux distributions compared (Ubuntu, Fedora and Open Suse).

10. When the giant seeks a truce with David: How Google and Microsoft saw the need to collaborate with Linux.

11. Conclusion. Where to go from here.

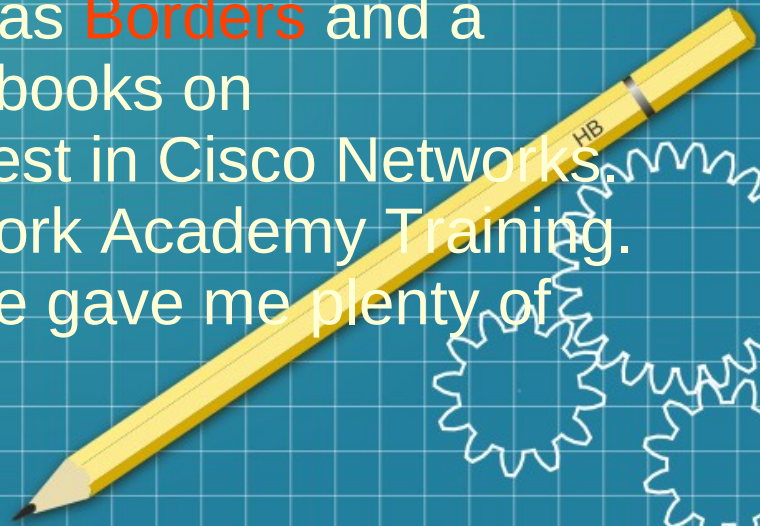
12. Definition of Terms



1. My Introduction to Linux Systems

First encounter with a computer was in the early eighties at my mum's workplace. Later on in high school where we would alternate between Apple Computers and Windows Computers. 5 years later I had some basic responsibilities at a leading computer seller as well as training pioneer where I was introduced to web design.

My first encounter with Linux is when I met a young man who was creating websites for our local church and hosting them of Unix servers. The next meeting was in North Carolina where a couple from a church gave me a copy of Linux Distro. Previously, I was using books from Barnes and Noble as well as Borders and a public Library in the same City. I read a few books on Cryptography as well as more in-depth interest in Cisco Networks. When I came to Uganda started Cisco Network Academy Training. A subsidized midnight to 6AM class schedule gave me plenty of time to pursue other interests.



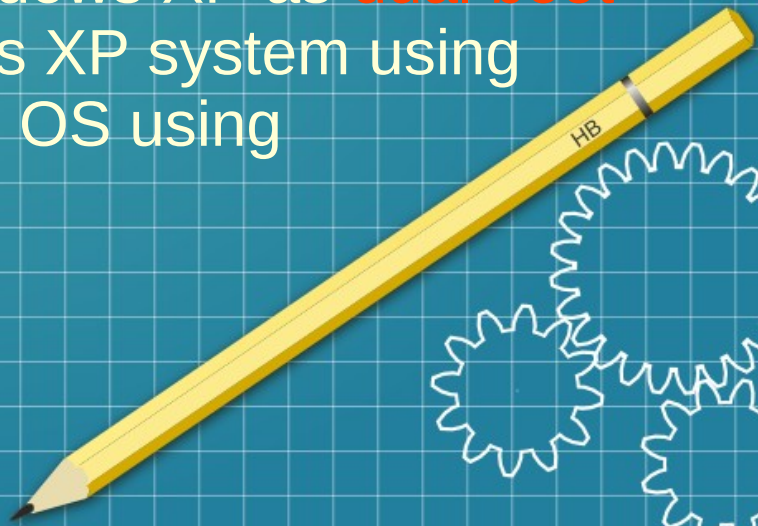
Picked up on the creation of websites with Macromedia Software. Later was introduced to Hosting which naturally led me to discovering more about Unix and Linux Servers. A family friend when he found out about my interest in web design later encouraged me to use Content Management Systems. He also guided me through the use of Linux as an alternative operating system.

The Software he provided was Open Suse as well as Fedora. In addition to that we explored the different options that exist for hosting sites. Here with CMSes like Joomla, I learned about ‘stacks’ that were designed to function in the three prominent environments (Mac, Windows and Linux). XAMPP which stands for Cross Platform Apache, MySQL, PHP and Perl. It is described as a platform that allows developers to to test their code locally on their own computers. Having your own mini web server at home.

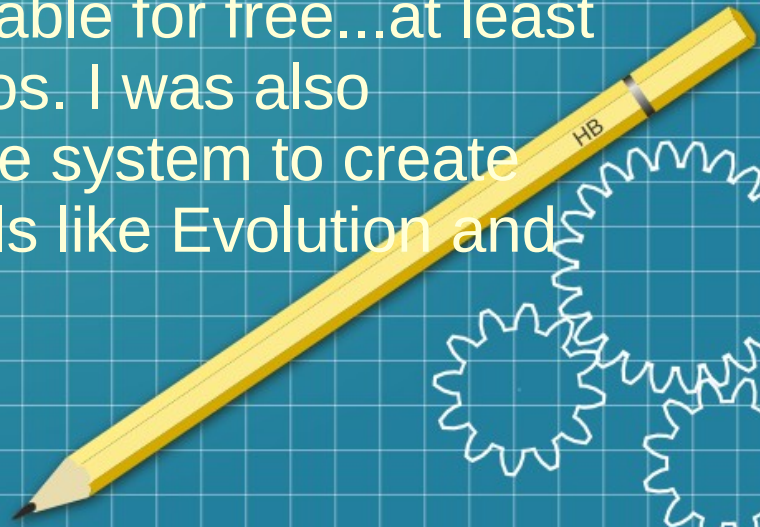
Later on I was able to interact with some people in the local Linux Users Group. Direct contact with Ubuntu in Europe and a request for an OS led to a response that allowed me to begin experimentation. Ubuntu Sent Desktop and Server Version with one request that I distribute it to others in my network for free just as I had received it.

From then on, I would experiment with different set ups. Ubuntu as the sole Operating System, Ubuntu and Windows XP as dual boot operating systems, Ubuntu Inside a Windows XP system using virtualization and Windows inside an Ubuntu OS using virtualization.

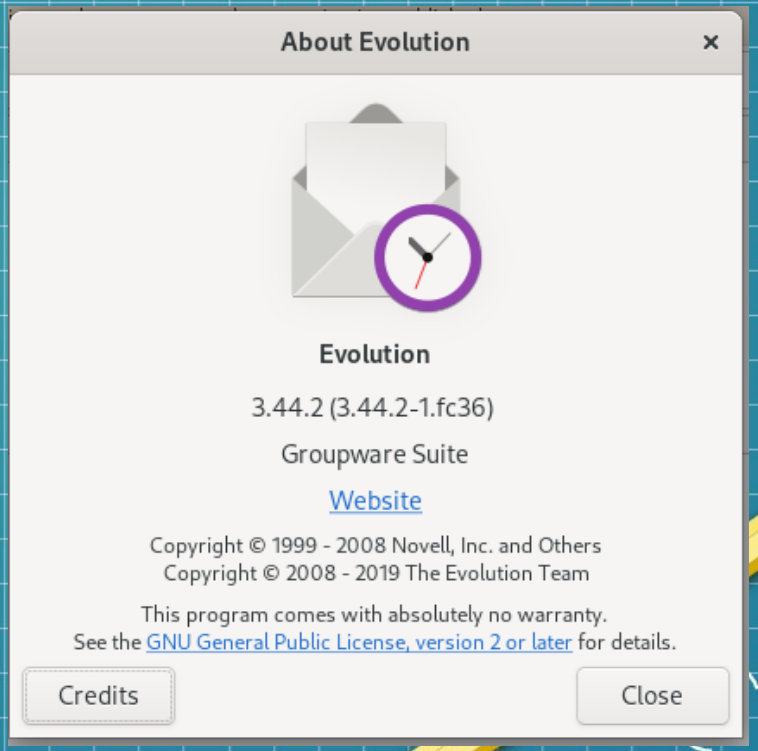


In addition to this I would explore the possibilities of finding replacements for Applications that I liked in the Windows Environment. My favorite design tool is Xara (Introduced by a friend). Interestingly this paid for tool is available for free...at least trimmed versions of it with some Linux Distros. I was also introduced to Tomboy which uses a Wiki-Like system to create HTML interlinked notes, additional email tools like Evolution and gPodder for podcasts, LibreOffice.



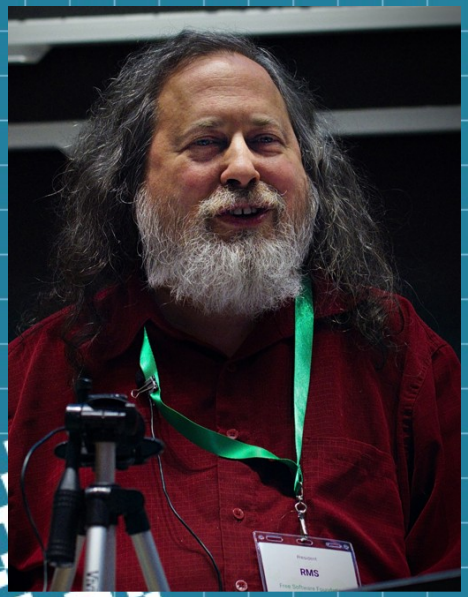
Some of My Favorite Tools



Some of My Favorite Tools

Some of My Favorite Tools

2. Who is who in the Linux World. Linus Torvalds (Creation of the Kernel) and Richard Stallman (Development of licensing for the free software movement).



Richard Matthew Stallman (/ˈstɔːlmən/; born March 16, 1953), also known by his initials, **rms,** is an American free software movement activist and programmer. He campaigns for software to be distributed in such a manner that its users have the freedom to use, study, distribute, and modify that software. Software that ensures these freedoms is termed free software. Stallman launched the GNU Project, founded the Free Software Foundation (FSF) in October 1985, developed the GNU Compiler Collection and GNU Emacs, and wrote all versions of the GNU General Public License.

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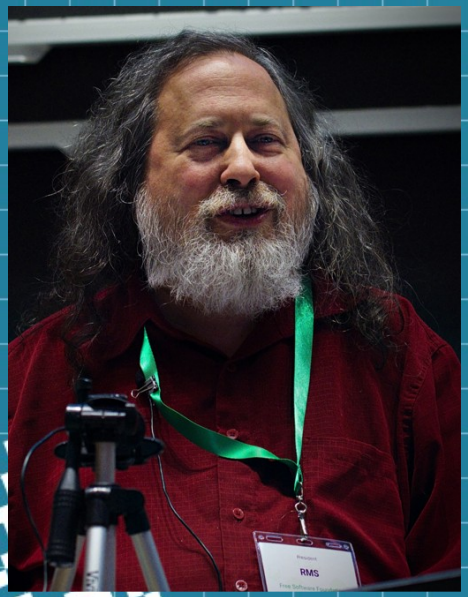

Stallman pioneered the concept of copyleft, which uses the principles of copyright law to preserve the right to use, modify, and distribute free software. He is the main author of free software licenses which describe those terms, most notably the GNU General Public License (GPL), the most widely used free software license.

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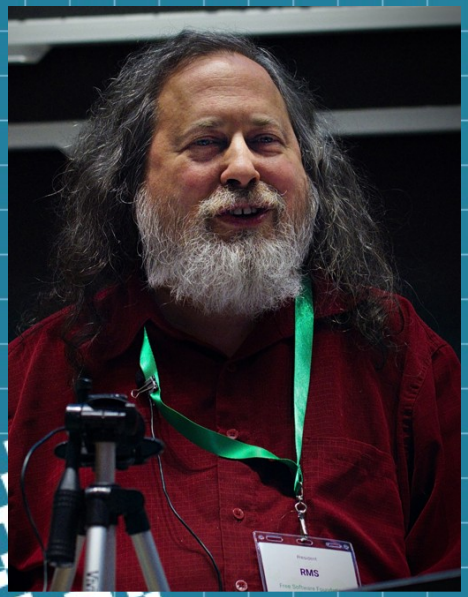
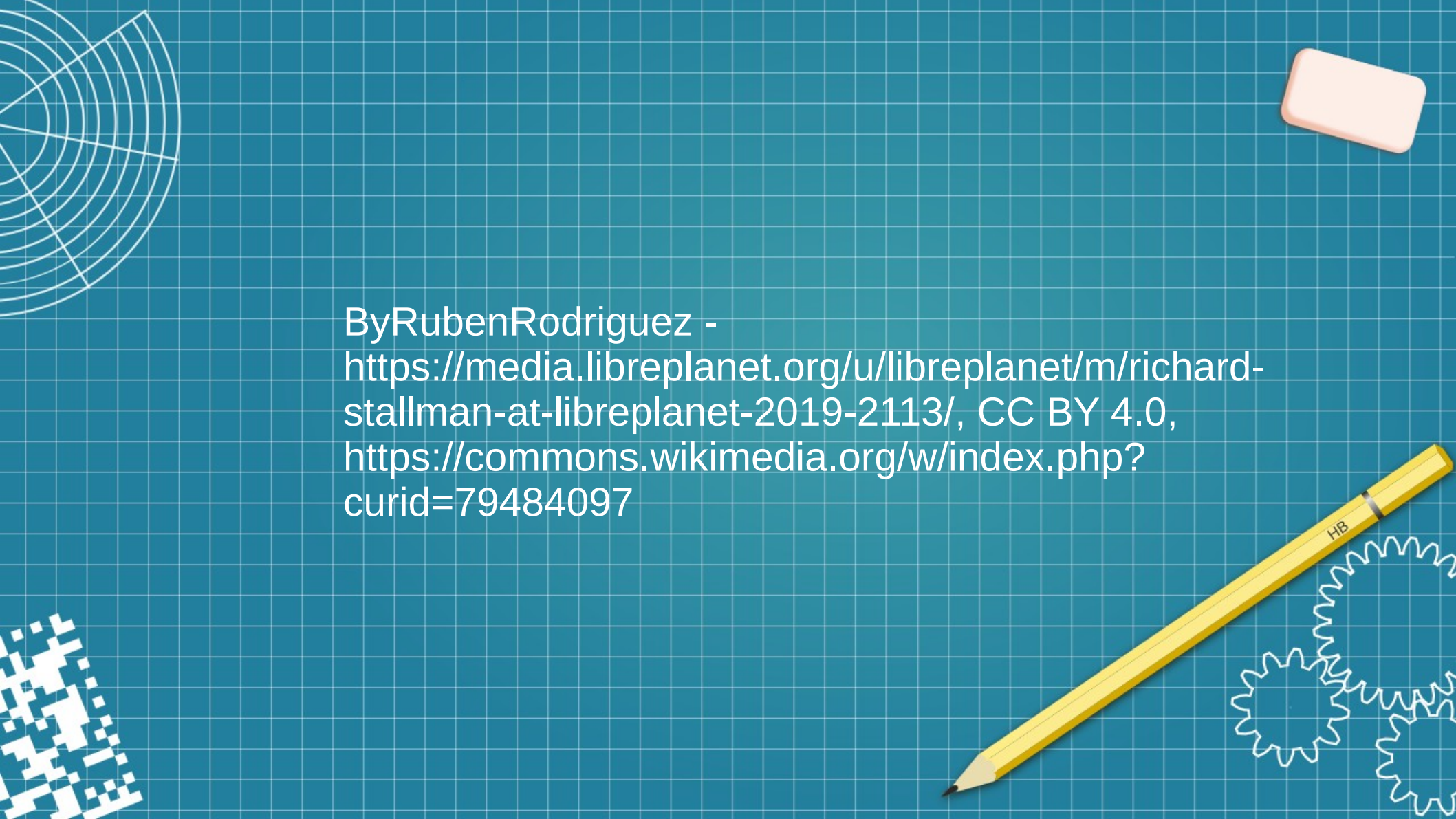


In 1989, he co-founded the League for Programming Freedom. Since the mid-1990s, Stallman has spent most of his time advocating for free software, as well as campaigning against software patents, digital rights management (which he refers to as digital *restrictions* management, calling the more common term misleading), and other legal and technical systems which he sees as taking away users' freedoms. This has included software license agreements, non-disclosure agreements, activation keys, dongles, copy restriction, proprietary formats, and binary executables without source code.


ByRubenRodriguez - https://media.libreplanet.org/u/libreplanet/m/richard-stallman-at-libreplanet-2019-2113/, CC BY 4.0, https://commons.wikimedia.org/w/index.php?curid=79484097
HB

2. Who is who in the Linux World. Linus Torvalds (Creation of the Kernel) and Richard Stallman (Development of licensing for the free software movement).

Linus Benedict Torvalds (/ˈliːnəs ˈtɔːrvɔːldz/ LEE-nəs TOR-vawldz,[3] Finland Swedish: [ˈliːnʉs ˈtuːrvɑlds] ⓘ; born 28 December 1969) is a Finnish software engineer who is the creator and lead developer of the Linux kernel, used by Linux distributions like Debian, Arch and Android. He also created the distributed version control system Git.

2. Who is who in the Linux World. Linus Torvalds (Creation of the Kernel) and Richard Stallman (Development of licensing for the free software movement).

He was honored, along with Shinya Yamanaka, with the 2012 Millennium Technology Prize by the Technology Academy Finland "in recognition of his creation of a new open sourceoperating system for computers leading to the widely used Linux kernel." He is also the recipient of the 2014 IEEE Computer Society Computer Pioneer Award and the 2018 IEEE Masaru Ibuka Consumer Electronics Award.

2. Who is who in the Linux World. Linus Torvalds (Creation of the Kernel) and Richard Stallman (Development of licensing for the free software movement).

Torvalds first encountered the GNU Project in fall of 1991 when another Swedish-speaking computer science student, Lars Wirzenius, took him to the University of Technology to listen to free software guru Richard Stallman's speech. Torvalds would ultimately switch his original license (which forbade commercial use) to Stallman's GNU General Public License version 2 (GPLv2) for his Linux kernel after complaints of distributors being unable to recoup their costs due to a non-commercial clause.

3. Intellectual Property, Software Licenses and the Creative Commons.

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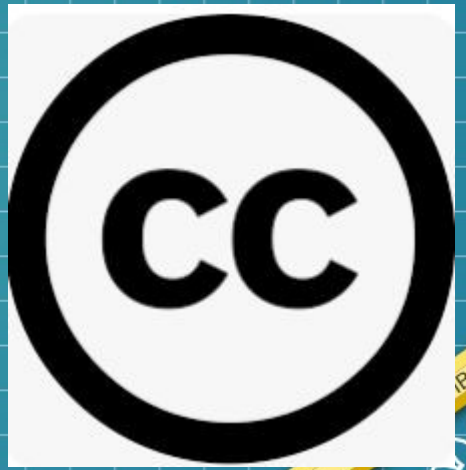
CEHURD
social justice in health



An Introduction to Linux is incomplete without some basic appreciation of Copyright Law. This started for me back in 2015 when CEHURD a social rights NGO and the Creative Commons Chapter in Uganda partnered with Makerere University to Provide the Copyright Course.

3. Intellectual Property, Software Licenses and the Creative Commons.

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Every year Harvard Law School offers a 12 week course on Copyright. Visit https://hls.harvard.edu/courses/copyright-8 as a graduate of the same we are asked to recommend people who might be interested in this course. Please contact me if you are interested.

Summary of Harvard Exchange Copyright Course and why it matters.

1. **Foundations of Copyright Law-**International Treaties, What is Protected Ideas vs. Expressions
2. **Fairness and Personality Theories** Common Law and Civil Law and Countries that function under each system.
3. **Subject Matter of Copyright Literary works** Dramatic works, Music, Audio Visual Works, Fictional Characters, Visual and Architecture and Software 1960-1978
4. **Welfare Theory**

Summary of Harvard Exchange Copyright Course and why it matters.

5. **Authorship** Joint ownership, Sole ownership and works for hire.
6. **Mechanics of Copyright** Decline of formalities, Duration and Protective Provisions
7. **Right to Reproduce** Reproduction and Improper Appropriation
8. **Rights to Distribute, Perform and Display** Distribution, Public Performance Exceptions and Limitations

Summary of Harvard Exchange Copyright Course and why it matters.

9. Fair use and Misuse

10. Cultural Theory

11. Supplements to Copyright Secondary liabilities, Dual-use Technologies and Technological Protection Measures

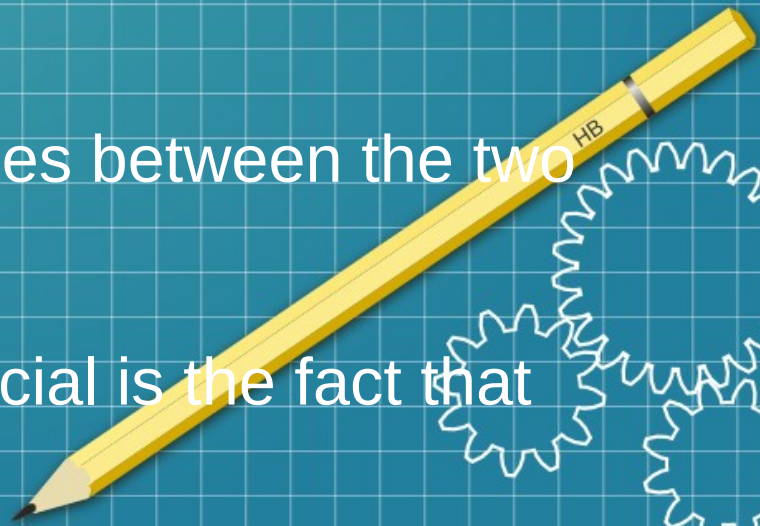
12. Remedies Equitable relief, Damages and Criminal Penalties

Additional Material for Research.

1. **Lawrence Lessing and Creative Commons** (relationship with copyleft) **movement.**

2. **Common Law and Civil Law** (Differences between the two and countries where they are practiced).

3. **Creative Commons Licenses** Most crucial is the fact that they do not cover Software.



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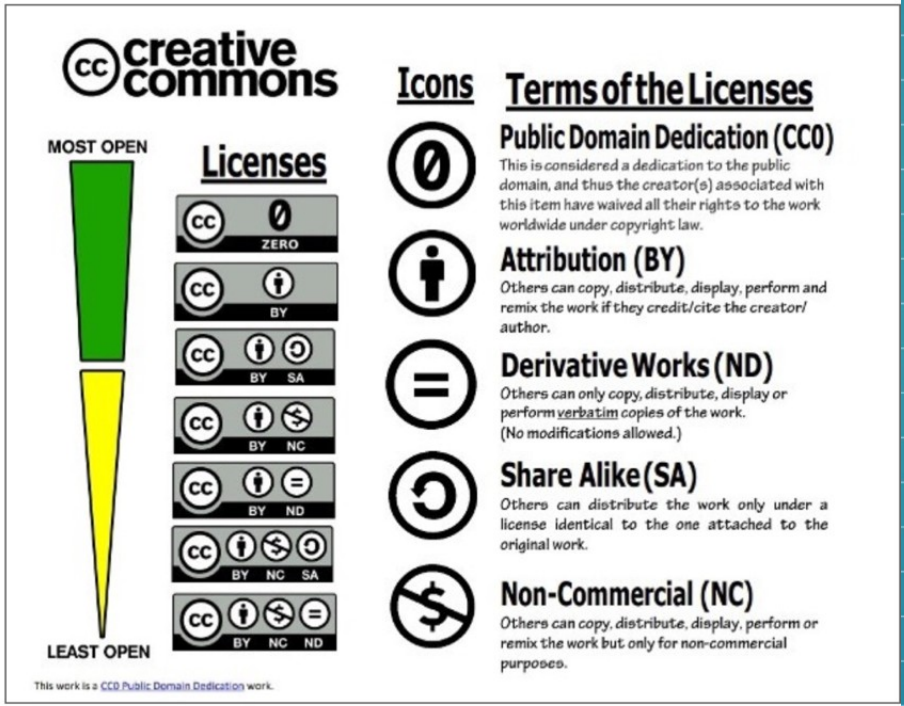
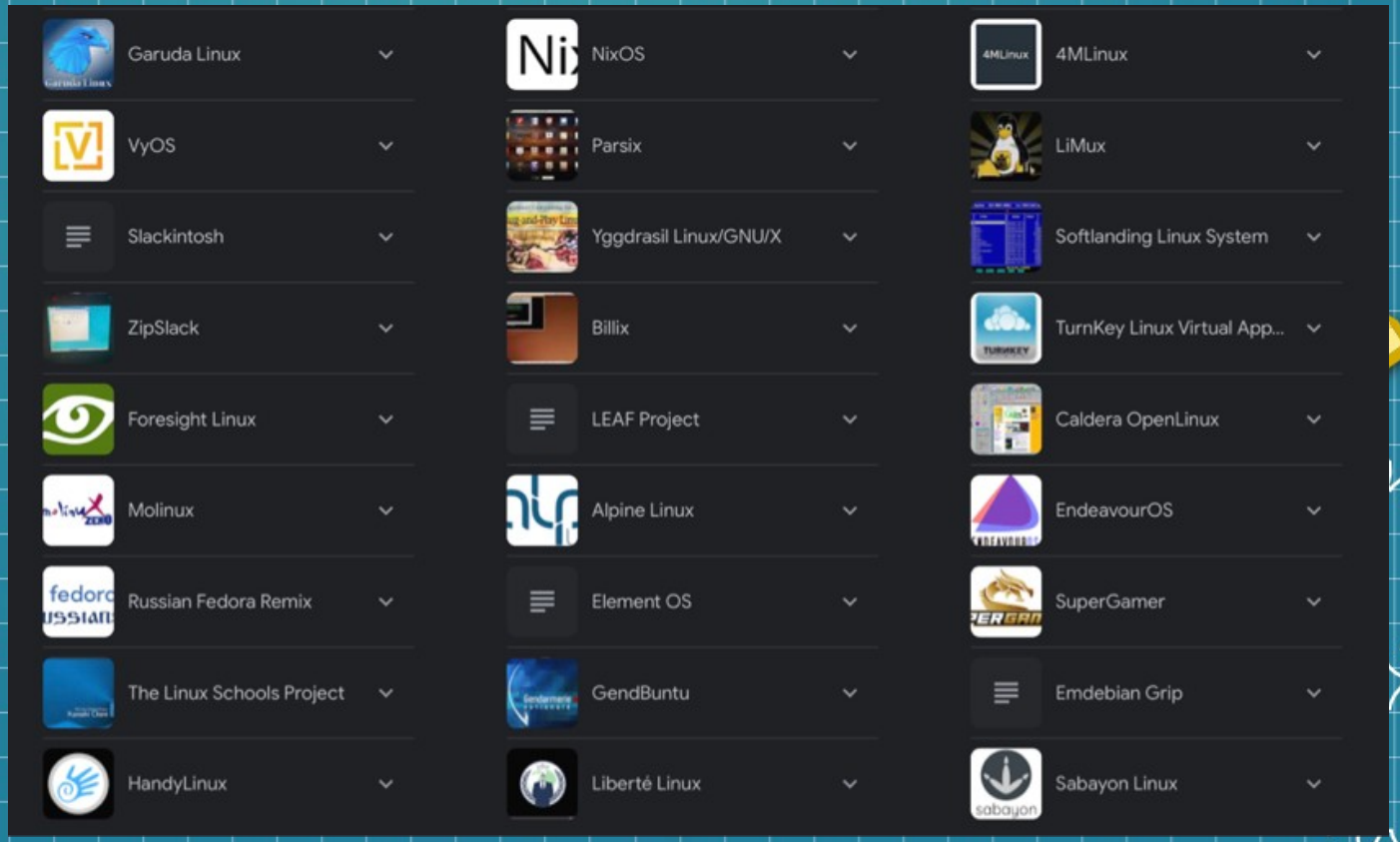


Use this infographic to understand the various CC licenses and their terms. This work is a CC0 Public Domain Dedication. Access a transcript of the graphic.

4. Unix and Windows differences in structure and function. Windows and Linux compared.

Linux Distributions.



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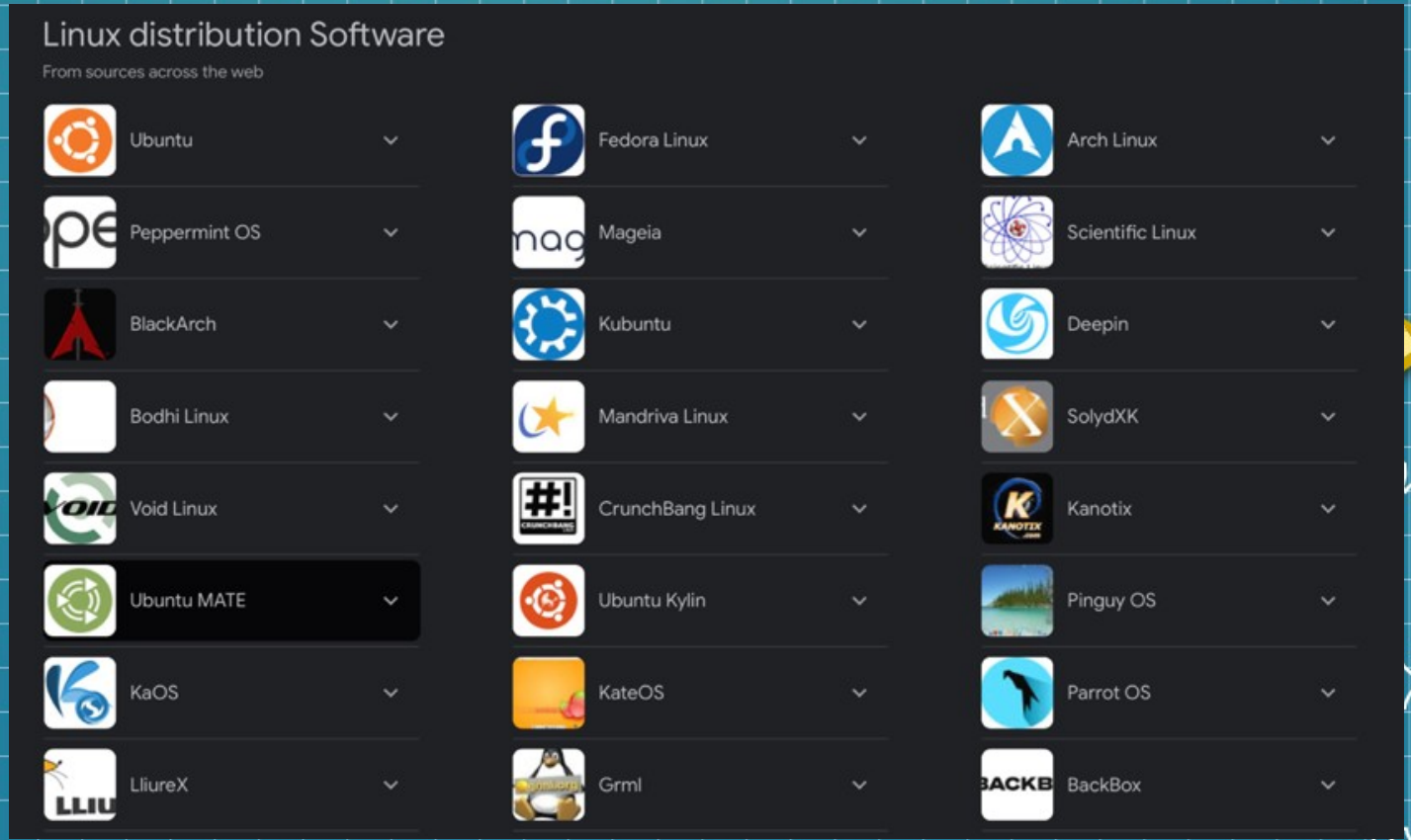


UNIX, Linux, and Windows: An Introduction

Microsoft Windows is an operating system that features a graphical user interface and compatibility with a wide range of hardware and software, primarily for personal computers.

UNIX is a multitasking, multi-user operating system developed for workstations, servers, and other devices. Its numerous applications include database management, software development, and networked applications. Systems equipped with UNIX are preferred for their security, flexibility, and stability. This operating system is the basis for numerous others, including macOS and Linux.

Linux is an open-source operating system available free of cost and based on UNIX. It is widely leveraged across various devices for stability, flexibility, and security.

https://www.spiceworks.com/tech/tech-101/articles/unix-linux-windows-comparison/#:~:text=Microsoft%20Windows%20is%20an%20operating,%2C%20servers%2C%20and%20other%20devices.

5. Ways to make use of Linux. Single OS on computer, Dual Booting Linux with other OSes like Windows or creating Virtual Versions of the same.

What is virtualization?

Virtualization is the creation of a virtual -- rather than actual -- version of something, such as an operating system (OS), a server, a storage device or network resources.

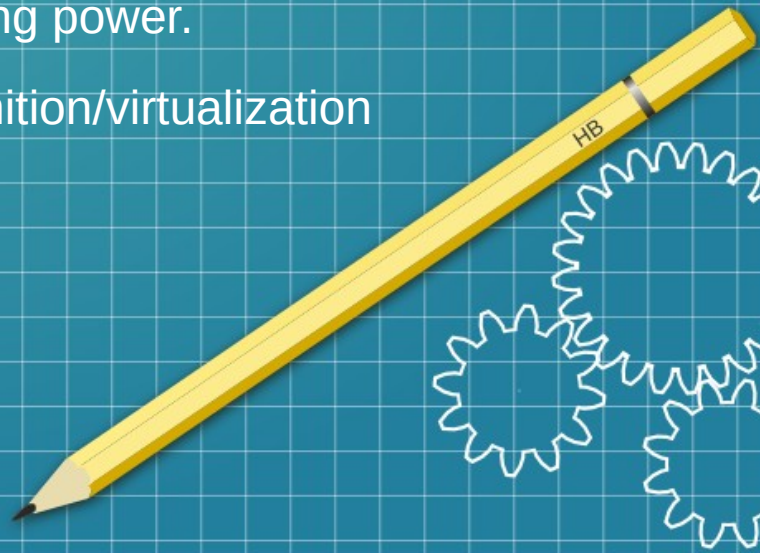
Virtualization uses software that simulates hardware functionality to create a virtual system. This practice allows IT organizations to operate multiple operating systems, more than one virtual system and various applications on a single server. The benefits of virtualization include greater efficiencies and economies of scale.

5. Ways to make use of Linux. Single OS on computer, Dual Booting Linux with other OSes like Windows or creating Virtual Versions of the same.

OS virtualization is the use of software to allow a piece of hardware to run multiple operating system images at the same time. The technology got its start on mainframes decades ago, allowing administrators to avoid wasting expensive processing power.

https://www.techtarget.com/searchitoperations/definition/virtualization

Types of virtualization
Limitations of virtualization
Advantages of virtualization



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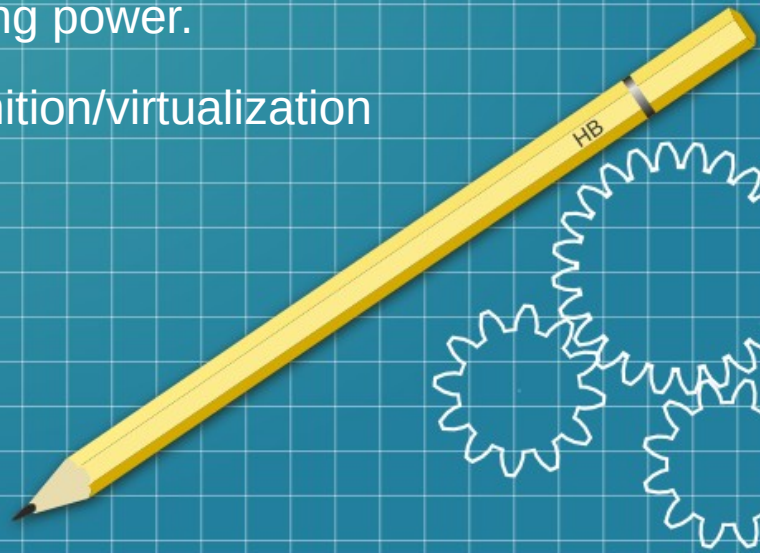
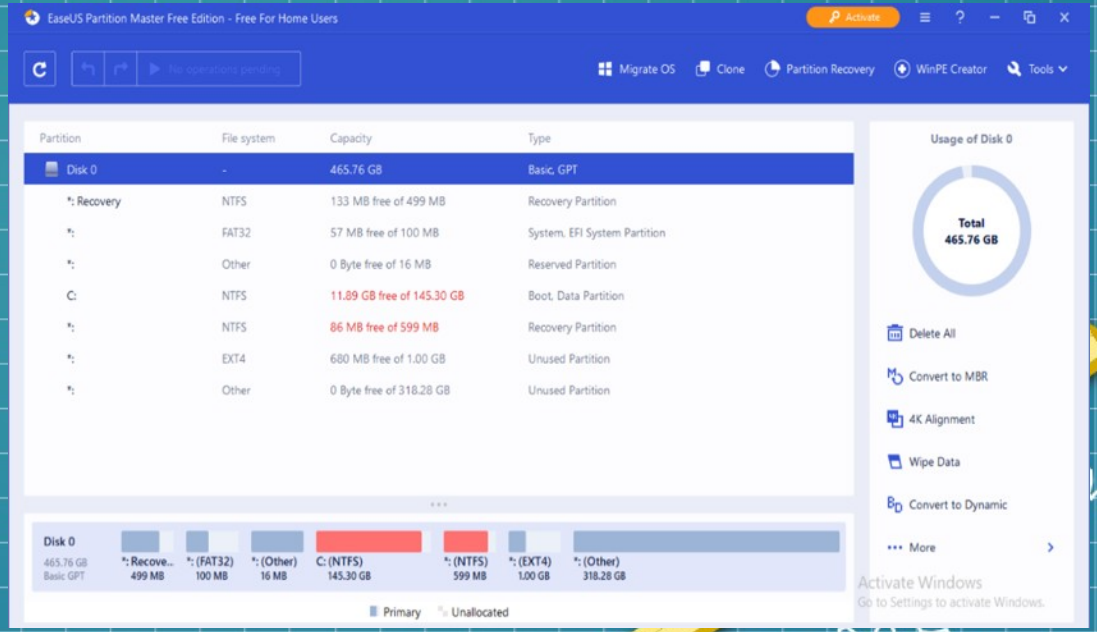


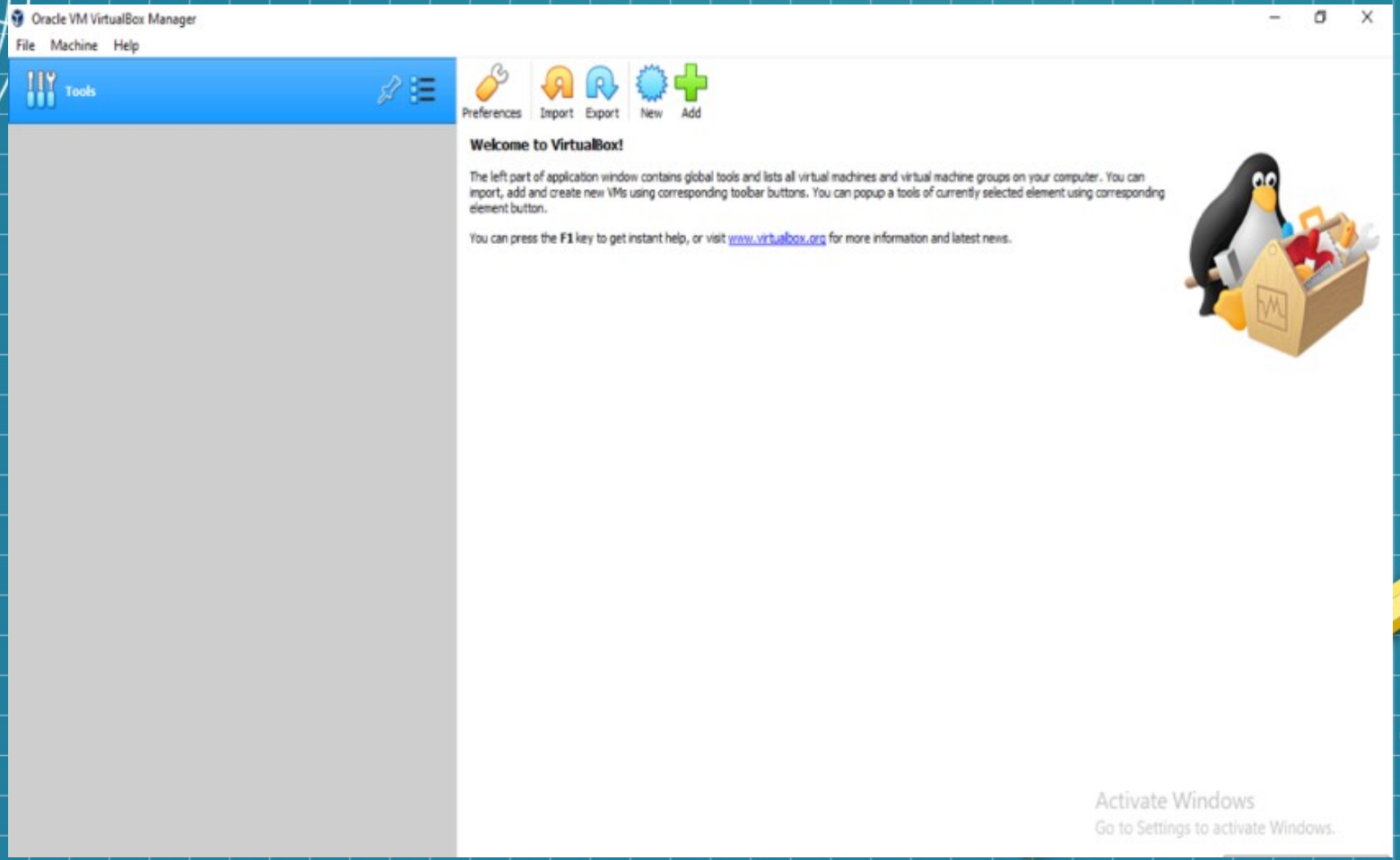
https://www.quora.com/Which-companies-have-the-top-Linux-kernel-hackers from a quora with Benish Fatima

1. **Red Hat**: Red Hat is an American multinational software company that provides open-source software products to enterprises. It is one of the primary contributors to the Linux kernel and has a large number of Linux kernel developers.
2. **Intel**: Intel, the multinational semiconductor chip manufacturer, is a significant contributor to the Linux kernel. Intel's contributions mainly focus on areas that are directly related to their hardware, such as graphics, power management, and overall performance optimizations.
3. **IBM**: IBM has been a significant player in the Linux world for many years, making substantial contributions to the Linux kernel. This was further intensified by their acquisition of Red Hat in 2019.
4. **Google**: Google uses Linux as the foundation of its Android operating system, so it's no surprise that Google is a significant contributor to the Linux kernel. They also use Linux extensively for their internal infrastructure and cloud services.
5. **Microsoft**: While traditionally a competitor to Linux with their Windows operating system, Microsoft has become a significant contributor to Linux in recent years, especially in areas related to their Azure cloud service. This is due to the increasing importance of Linux in the world of cloud computing.
6. **SUSE**: SUSE is a German-based, multinational, open-source software company that develops and sells Linux products to business customers. They are also known for their significant contributions to the Linux kernel.
7. **Linaro**: Linaro is a consortium focused on improving Linux, tools, and software on ARM devices. Its members include ARM, Samsung, Huawei, and Qualcomm, among others. Linaro contributes to the Linux kernel primarily in areas relevant to these devices.
8. **Facebook**: Facebook uses Linux extensively in their data centers, and they have a dedicated team working on the Linux kernel, making significant contributions, particularly in areas related to performance and scalability.

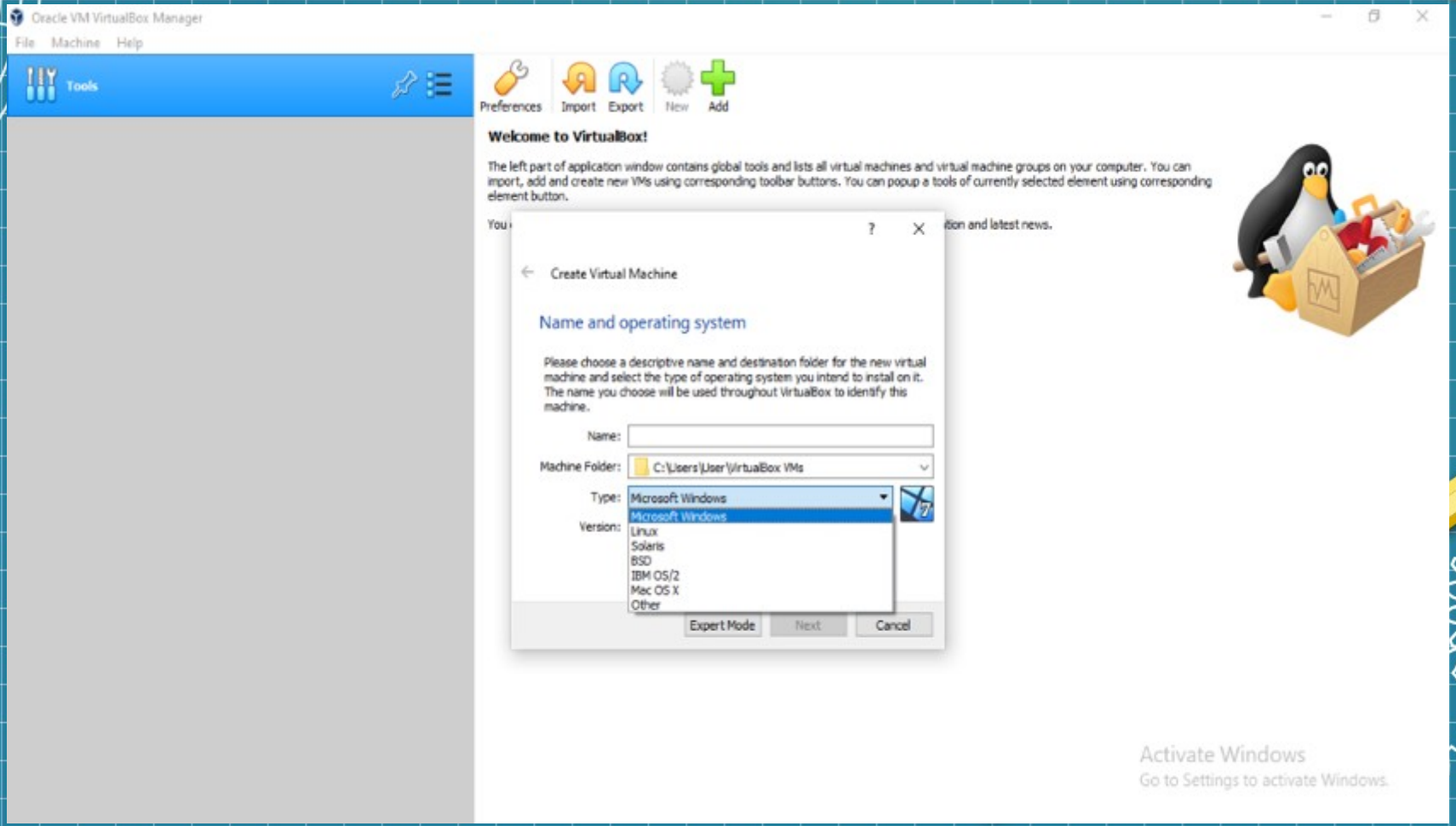
Tools for Dual Booting: This depends on the version of Windows that you are using. EaseUS Partition Master



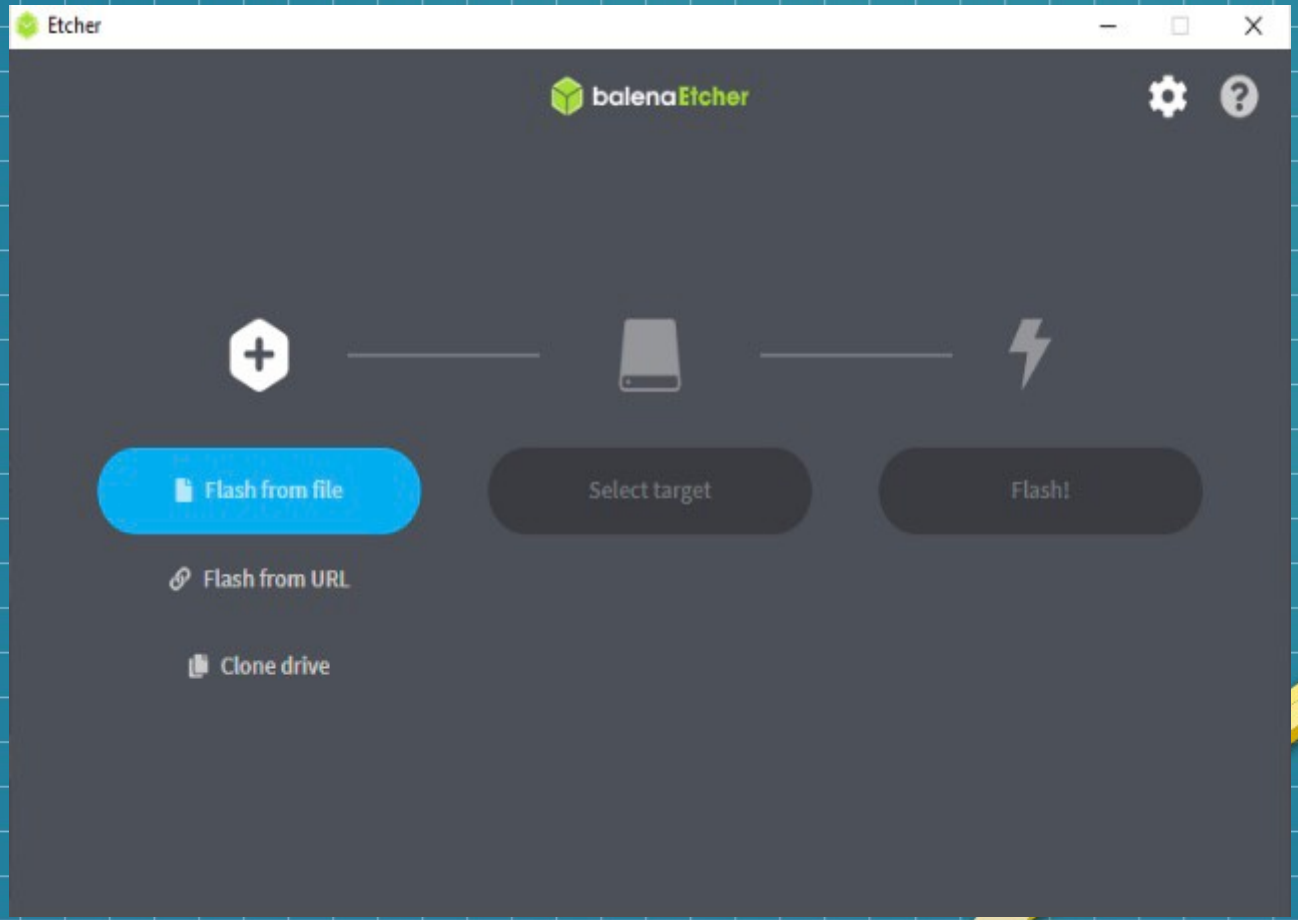
Tools for Virtualization: This depends if you are in Windows and want to run another OS using Oracle VM



Tools for Virtualization: This depends if you are in the Windows environment and want to run either Windows or Linux. Oracle VM



Tools for Dual Booting Windows 10 Fedora 34 (Having the Choice on Boot to select OSes): BalenaEtcher

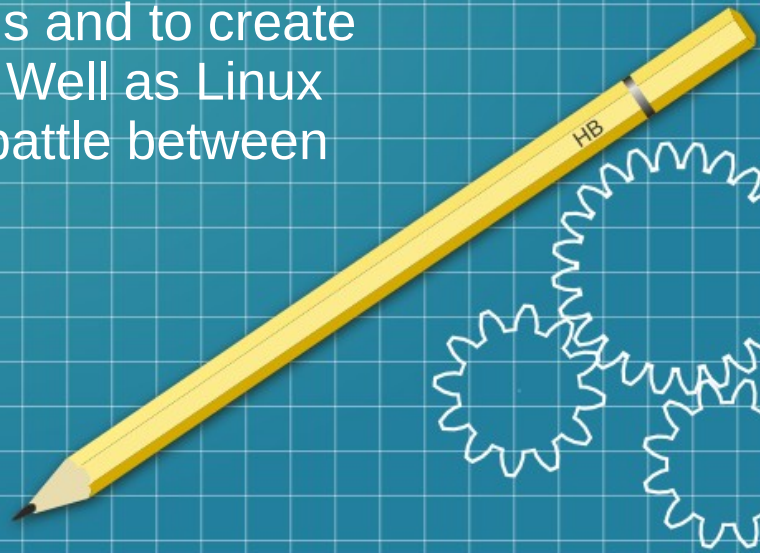


6. Security and Goodwill-The case for Linux. Systems of global distribution and merchandising.

The fact that you have access to the Source Code of Linux and the ability to create on top of it means that Linux is a favored OS for the developer community. This is not the case with Windows. I have no figures for the revenue generated from Windows OS sales but my guess is that the numbers are better in the US and Europe than they are in most parts of the Southern Hemisphere. What this means is that most users utilize Windows through none traditional channels (read illegal). Microsoft's argument is that at least they are using the OS.

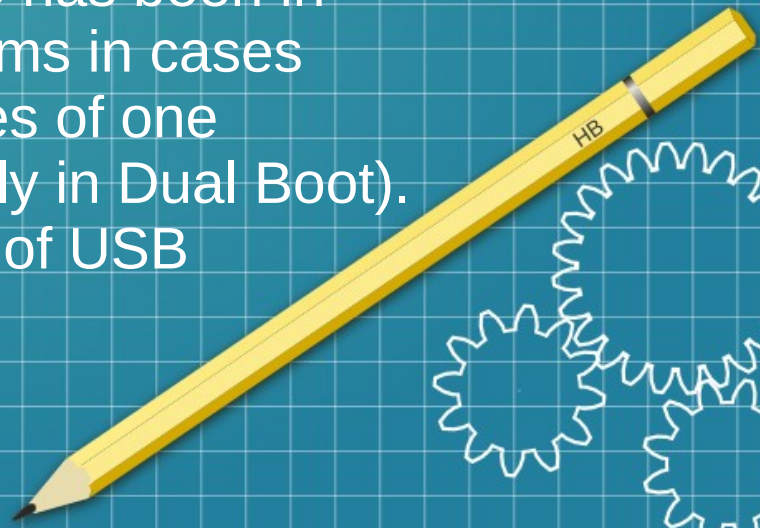
6. Security and Goodwill-The case for Linux. Systems of global distribution and merchandising.

If you are troubled by conscience, my suggestion is that you migrate to a Linux Distro. Recently there has been an attempt by Microsoft to merge with some Linux systems and to create Applications that can work in Mac Systems as Well as Linux Systems. It will be interesting to see how this battle between Open Source and Closed will play out.



6. Security and Goodwill-The case for Linux. Systems of global distribution and merchandising.

In the meantime my favorite security hack has been to create a non traditional complex system that merges Windows with Linux through virtualization or at least creating dual boot systems. The challenge has been in the ability to tunnel between the two systems in cases where for example I wish to access the files of one system when working in another (especially in Dual Boot). Additional hitches have been with the use of USB Internet.



Here are some facts about Linux that may interest you:

7. Possibilities for mobile, communities, collaboration and development.

1) The first ever Linux kernel just occupied only 65 KB.
2) As of 2018, there are 20, 323, 379 lines of code in the Linux kernel.
3) All of the 500 fastest supercomputers run Linux.
4) Linux runs on everything, smartphones, servers, submarines or space rockets.
5) Huawei, Intel, Google, Red Hat, Facebook, Canonical and Samsung are among the top contributors to Linux kernel development in recent years.
6) Linux is written over 95% of in C language, according to data by the openhub.net website.

7. Possibilities for mobile communities, collaboration and development

Here are some facts about Linux that may interest you:

7) Every time a kernel is released, it is given a codename. Recent codenames were “Fearless Coyote” (v4.13) and “Merciless Moray” (v4.18).

8) In Japan, the bullet trains use Linux to maintain and manage the advanced Automatic Train Control system. The Linux platform is also used in the In-Vehicle-Infotainment technology (IVI) in Toyota and the other automobiles.

9) We can also run our Ubuntu Phone in windowed mode with little tweaks.

10) Linux has a specific place in Hollywood. The Visual effects of Avatar and Titanic were developed on Linux platform in 3D applications using the FOSS software.

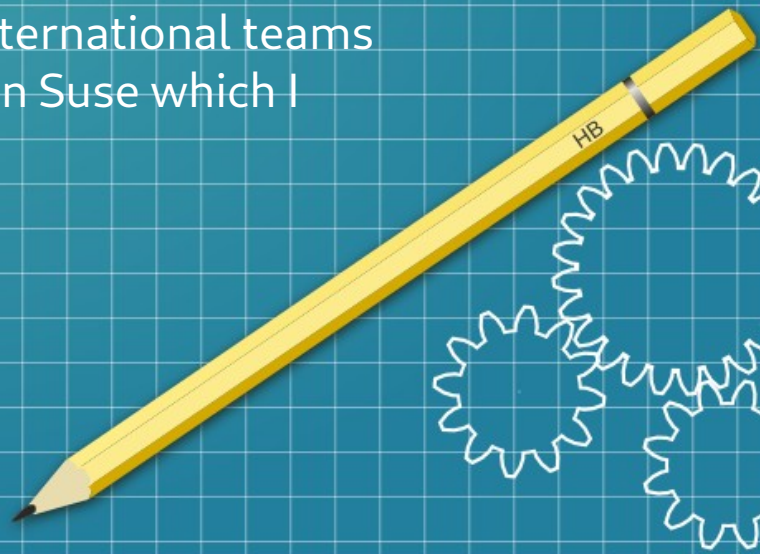
From: https://www.Geeksforgeeks.org

8. My favorite Linux distributions compared (Ubuntu, Fedora and Open Suse).

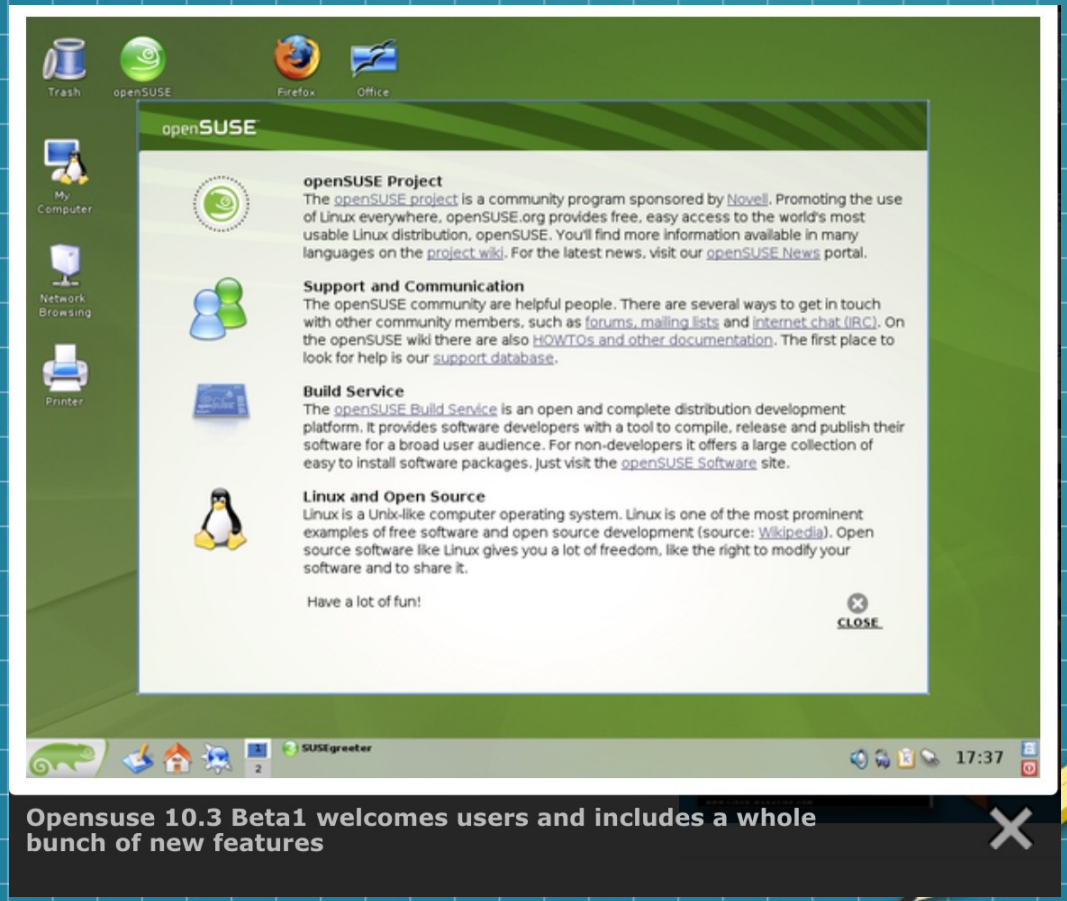
As stated earlier the first interaction with Linux was with Caldera. But the package was in a box. A lot more happened much later when a friend introduced me to other Linux Distributions. In those days most of the Interactions with these Operating Systems took place through CDs and DVDs. There were also several servers that often were hosted in Universities scattered across the globe. Here users could upgrade their systems as well as download OSes if they were starting off.

8. My favorite Linux distributions compared (Ubuntu, Fedora and Open Suse).

In addition to this there were Linux User Groups that were established to help local communities learn and connect with international teams for development and support. I started off with Open Suse which I enjoyed using.

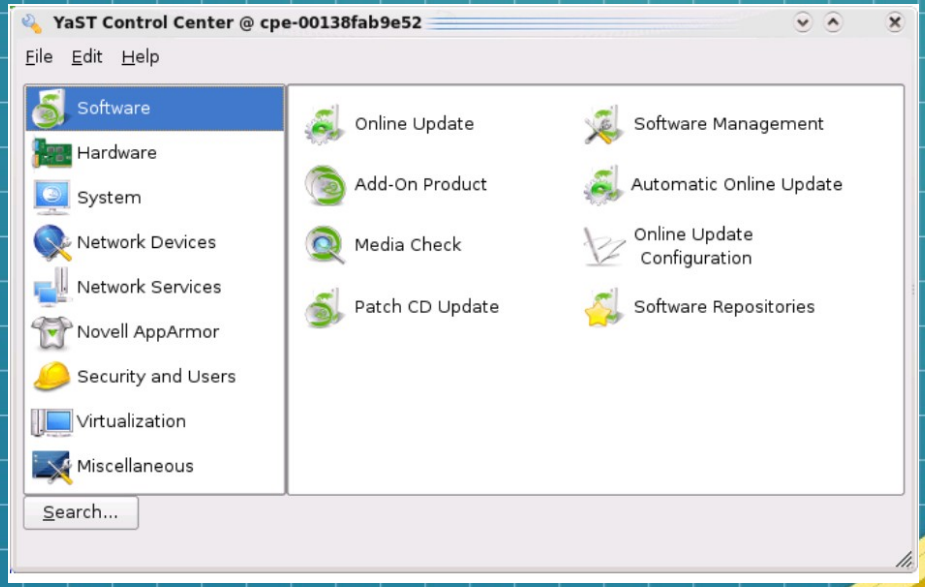


Open Suse 10.3



Opensuse 10.3 Beta1 welcomes users and includes a whole bunch of new features

Open Suse 10.3 Yast Control Center

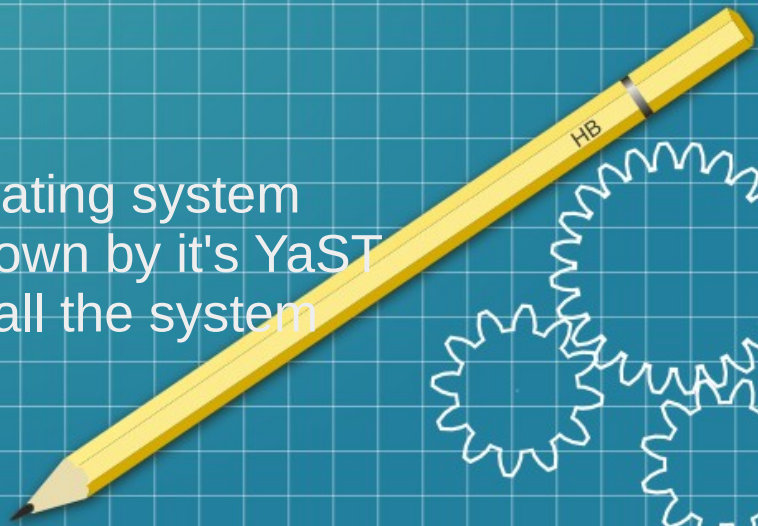


Open Suse

SUSE Linux 10.0 included the following packages:

- KDE 3.4.2
- OpenOffice.org 1.9.125 (with 2.0 available via YaST Online Update)
- GNOME 2.12.0.1
- Linux Kernel 2.6.13

YaST (Yet another Setup Tool) is a Linux operating system setup and configuration tool. OpenSUSE is known by it's YaST control center, a powerful tool that centralizes all the system configurations.



Open SuSE RPM and DEB Packages

YaST was built to work with RPM packages, one of the two most popular package formats. Ubuntu, along with all Debian variants, use DEB packages and their related tools (dpkg/apt) for package management.

Distros

The .deb files are meant for distributions of Linux that derive from Debian (Ubuntu, Linux Mint, etc.). The .rpm files are used primarily by distributions that derive from Redhat based distros (Fedora, CentOS, RHEL) as well as by the openSuSE distro.

What's special about them?

Open Suse

These files have one other special trait that sets them apart from .zip files, in that they can include a specification that contains rules that tell the package manager software running on a system that's installing one of these files to do additional tasks. These tasks would include things such as:

- creating user accounts on the system
- creating/modifying configuration files that aren't actually contained in the .deb or .rpm file
- set ownership/permissions on the files after installation
- run commands as root on the system that's installing the package
- dependencies, both formats can include names or packages and/or service names that they require to be present on a system, prior to installation.

Open Suse

What about .msi files?

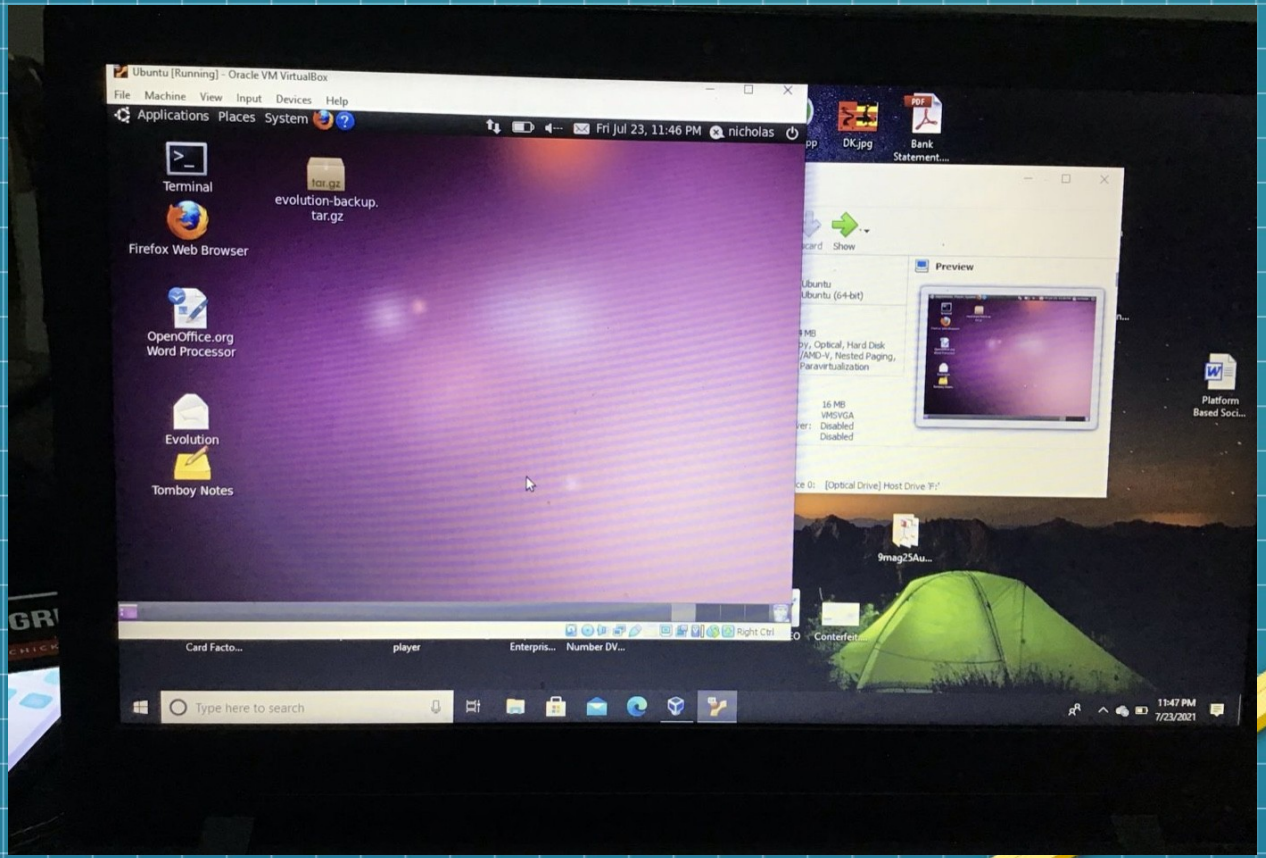
.msi files are similar to .deb & .rpm files but likely even more sophisticated. The .msi files are utilized by the Windows Installer and offer additional features such as:

- GUI Framework
- generation of uninstall sequences
- A framework within itself - for use by 3rd party installers
- Rollbacks
- Advertisement
- User Interface

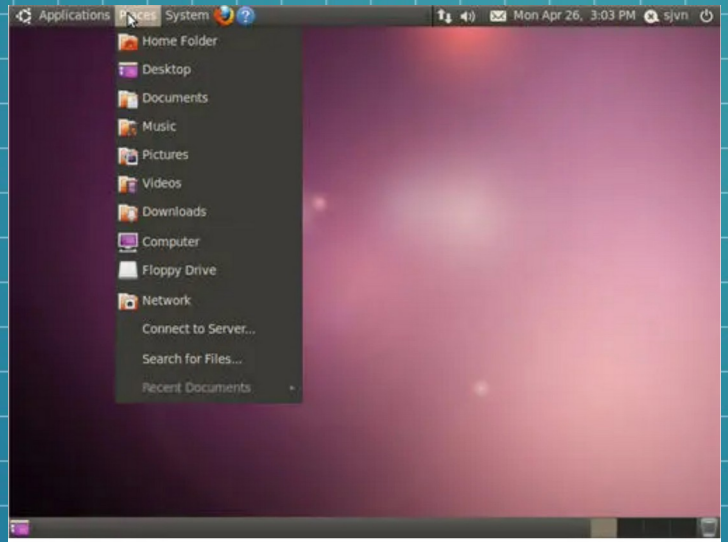
Ubuntu, Fedora and Open Suse compared.

But I think my favorite was Ubuntu. Part of the reason for this was distribution and support. Ubuntu had a system called LTS Long Term Support. Where you used the Operating System with support for a stated period of time after which you were required to upgrade. Additionally, one simple request on email was all I needed for the team in the Netherlands to send me the Two OSes Workstation and Server. The Ubuntu Team also had a site that was devoted to Merchandise. Here you could get CDs, DVDs, Flash Disks with Ubuntu Distros,,Shirts, Caps and More. There were also communities that let you contribute to the Application Development, Bug Fixes, Artistic Features such as Wallpapers, Names of New Distributions.

Ubuntu 10.04 LTS within a Windows Environment by Virtualization



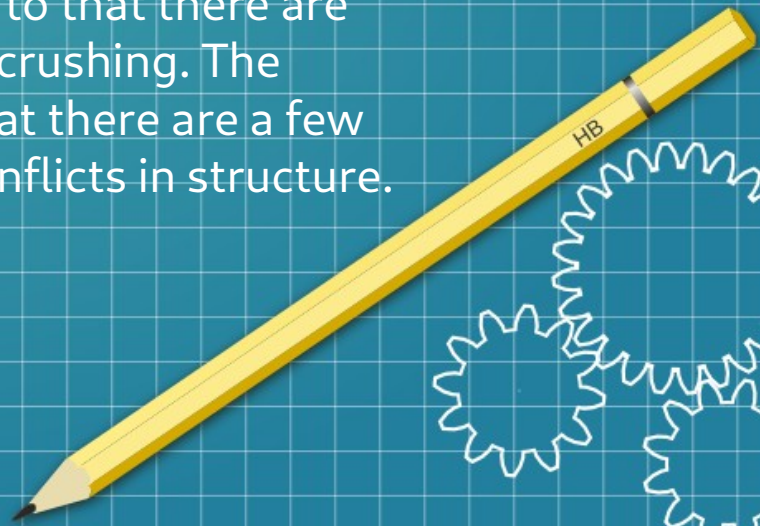
Ubuntu 10.04 LTS



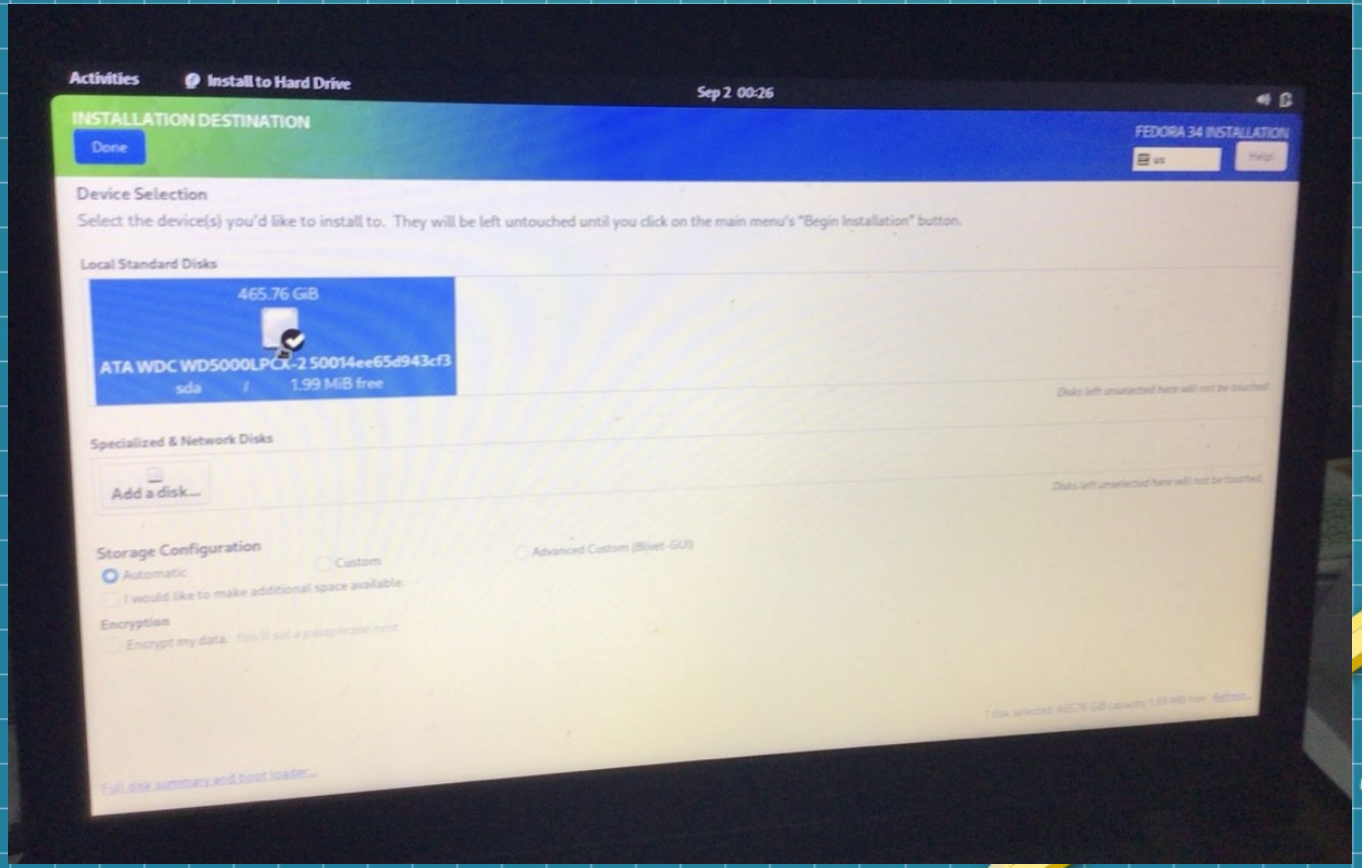
Ubuntu 10.04 features a new interface that concentrates on ease of use.

8. My favorite Linux distributions compared (Ubuntu, Fedora and Open Suse).

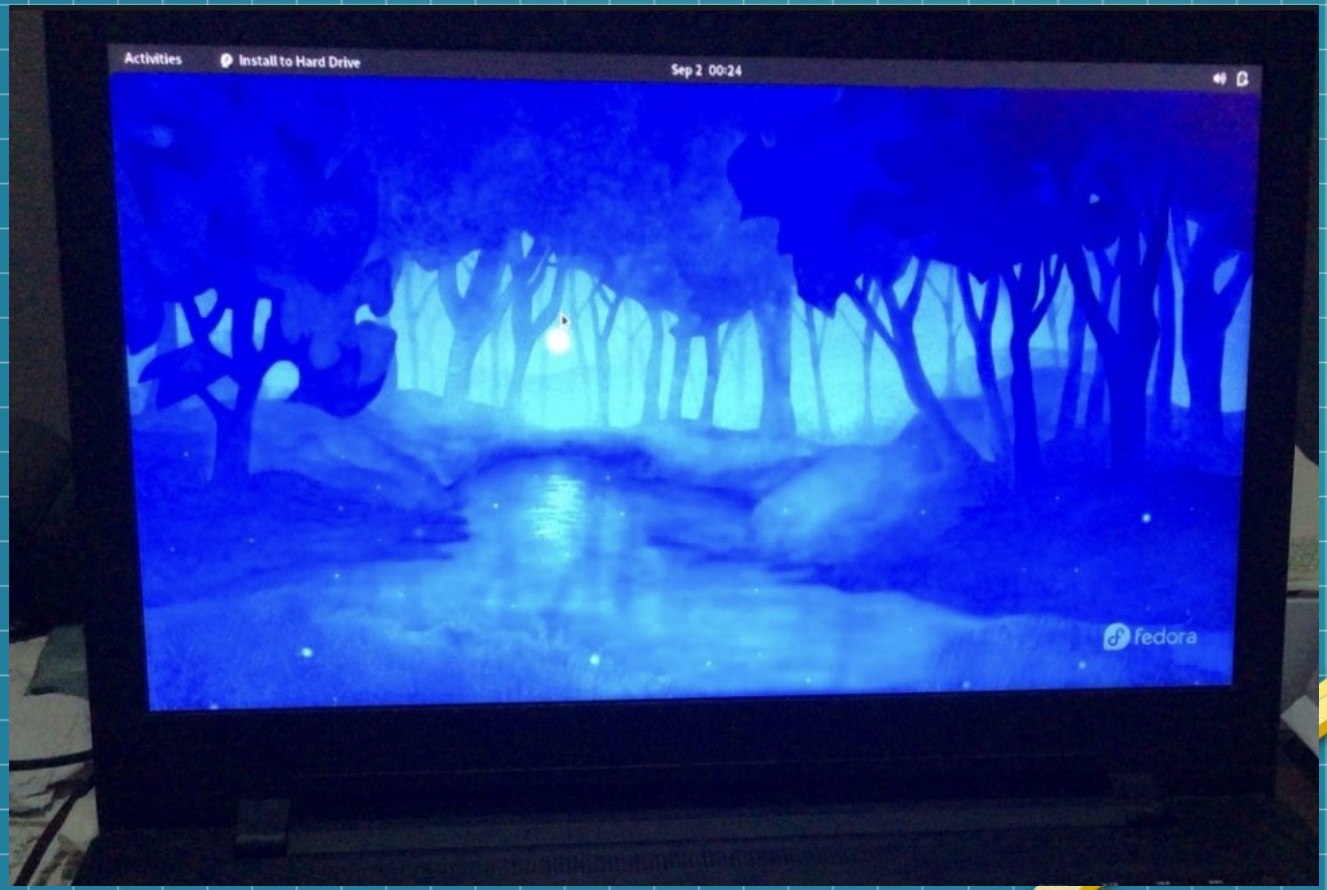
Currently using Fedora although there are some challenges with Migration from Fedora 34 to Fedora 39. In addition to that there are some applications such as Firefox that are prone to crushing. The inability to migrate from 34 to 39 has also meant that there are a few applications that cannot be upgraded because of conflicts in structure.



Fedora Installation using BalenaEtcher



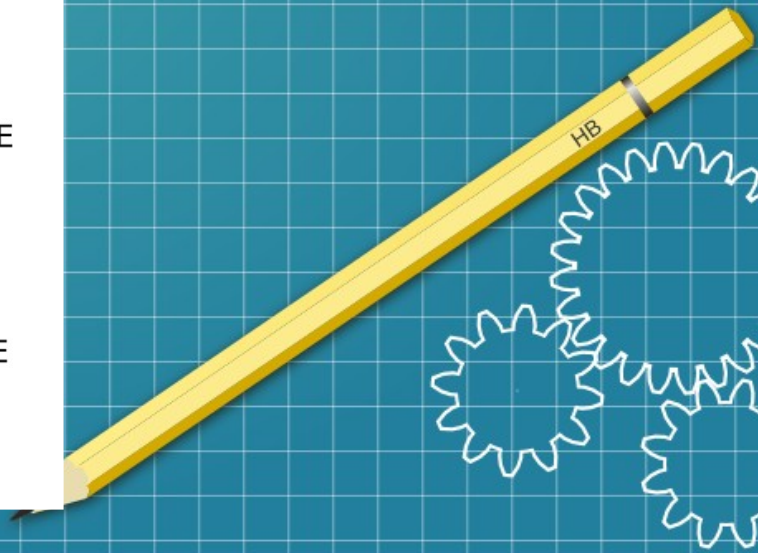
Fedora 34



9. Overcoming the challenges of familiar applications when migrating from Windows to Linux.

https://wiki.linuxquestions.org/wiki/Linux_software_equivalent_to_Windows_software

WİNDOWS	LİNUX
AFTER EFECTS	NATRON
PHOTOSHOP	GİMP
PREMİERE	LİGHTWORKS
LİGHTROOM	RAW THERAPEE
DREAMWEAVER	BLUE FİSH
COREL DRAW	INKSPACE
3DSMAX	BLENDER
MS OFFİCE	LİBRE OFFİCE
AUTOCAD	OPEN SCAD



10. How Google and Microsoft saw the need to collaborate with Linux.

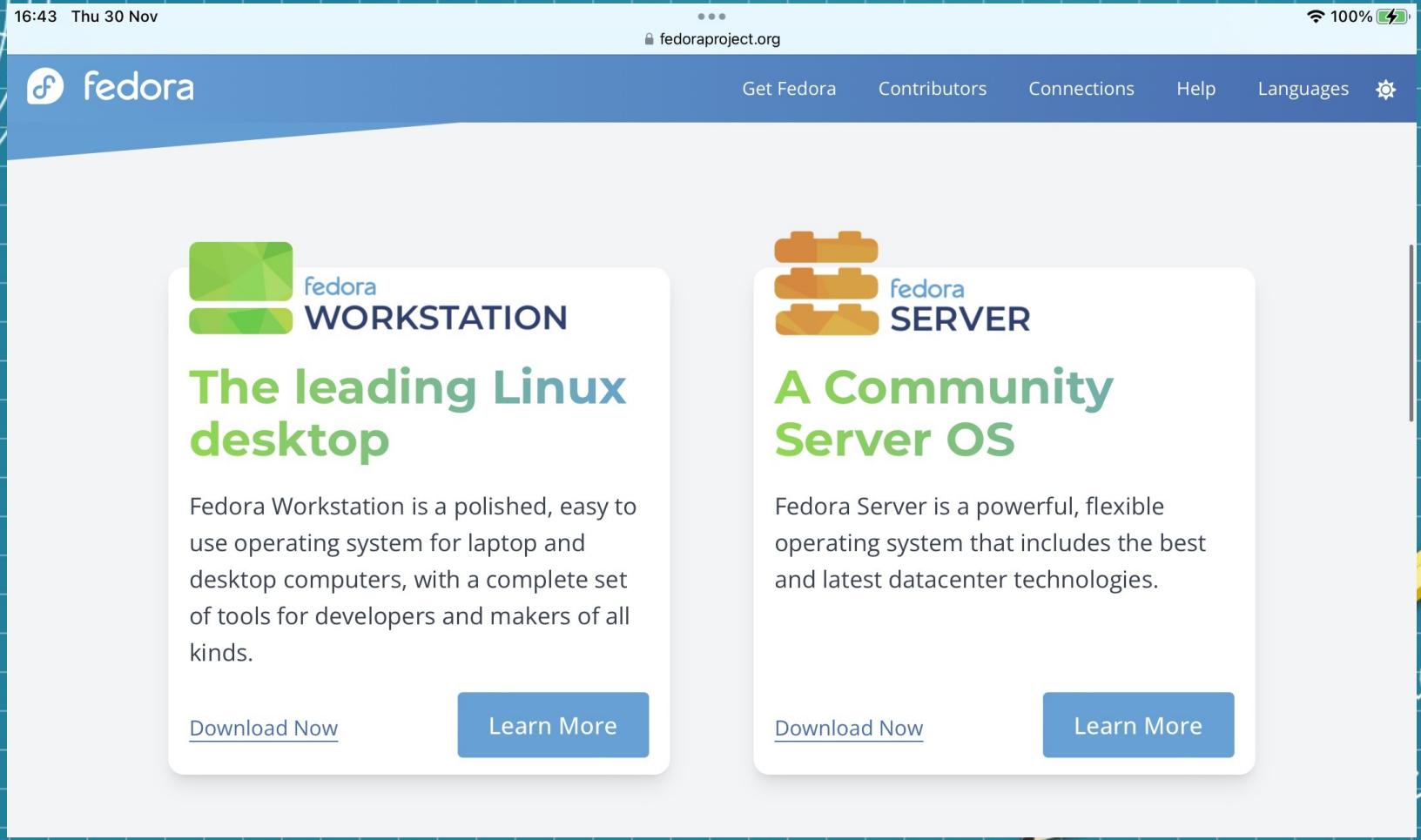
https://news.microsoft.com/2006/11/02/microsoft-and-novell-announce-broad-collaboration-on-windows-and-linux-interoperability-and-support/

Novell and Microsoft

https://www.techtaffy.com/google-joins-linux-collaboration-open-invention-network/

https://www.computerworld.com/article/3668548/the-story-behind-google-s-in-house-desktop-linux.html

10. Fedora Projects Workstation and Server.



10. Fedora Projects IOT and Cloud

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10. Fedora Projects Containers.

10. Ubuntu Pro.

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10. Ubuntu Containers and Private Clouds.

Multi-cloud Kubernetes and containers

AKS. EKS. GKE. Kubeadm. MicroK8s. Charmed Kubernetes. All on Ubuntu.

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- Wide choice of SDN and storage
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- Long term maintenance commitment
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- TCO analysis of Open Infra
- 451 study on private/public cloud costs

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10. Ubuntu Multi Cloud Applications, Workstations and Desktops

Multi-cloud applications – beyond PAAS

Universal model-driven operators for classic and Kubernetes estate.

- Operate smoothly across public and private cloud
- Reusable integration code as open source packages
- Python Operator Framework for rapid development
- Bring the K8s operator pattern to classic workloads
- Lifecycle management and Day 2 operations
- Open collection of community-driven operators

Learn more about universal operators

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Optimised AI/ML and cloud devops. The professional developer's preference.

- Active Directory and LDAP integration
- Full disk encryption
- Security updates for the full open source stack
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- Configuration lockdown
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- Trim time-to-market with SMART START consulting
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Ubuntu Core Appliances with transactional updates for a better embedded Linux.

- OTA compressed updates for apps, kernel and OS
- Automatic rollback and data snapshots
- Managed private app stores for secure fleet management
- DevSecOps pipeline for edge app delivery
- Built-in device recovery and remote disk repair
- 10 year security maintenance for every device
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The 2020 HackerEarth Developer Survey

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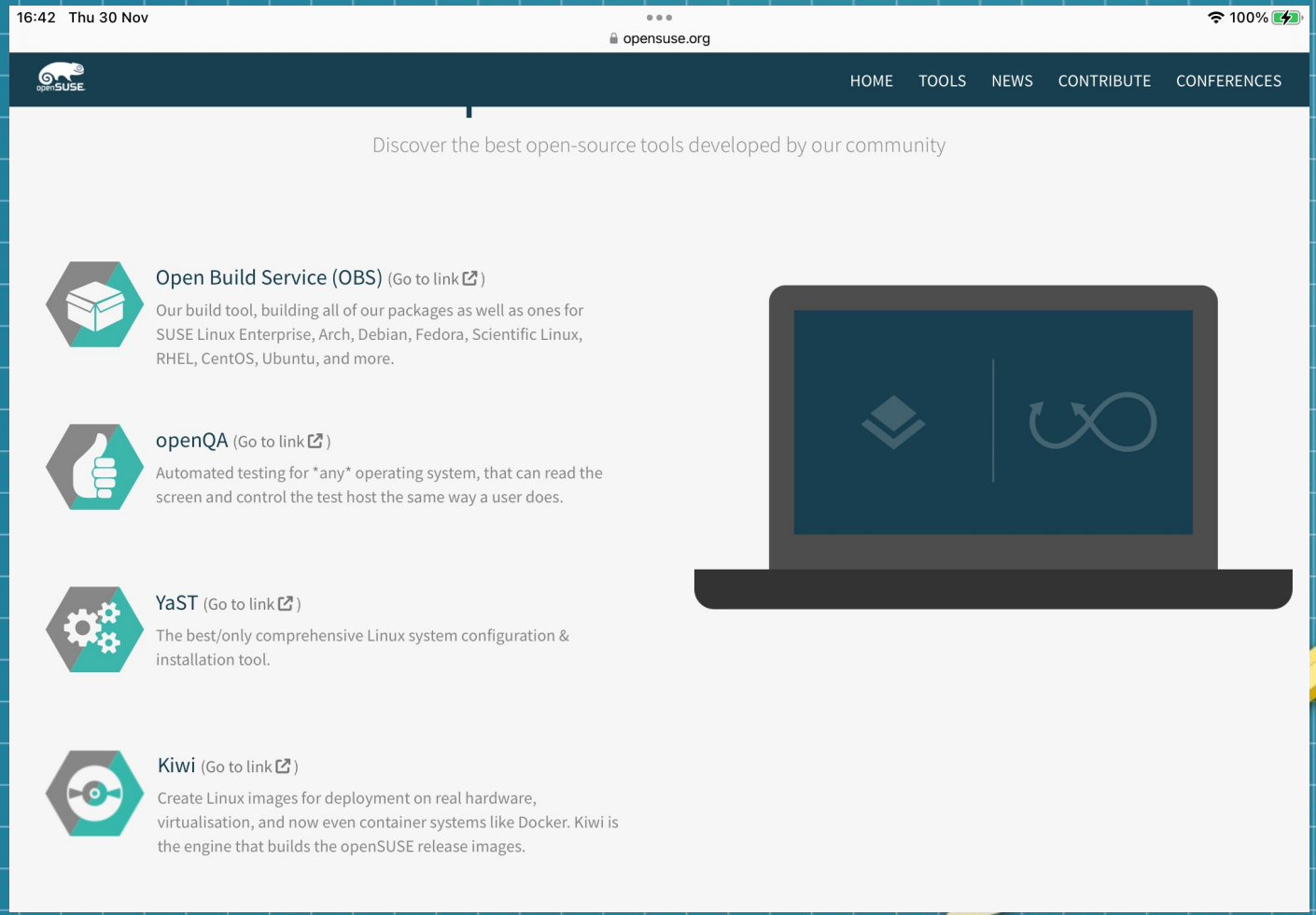
10. Open Suse YAST, OpenQA, Kiwi and Open Build Service.



11. Conclusions: Where do we go from here?

Privacy, Back Doors, Open Source Code Philosophy and Security in General.
Please do some research on the changes that took place in the Surveillance Law Post 9/11.
Also look into the key revelations that the Edward Snowden Leaks brought to the surface.
In addition to that the role that WikiLeaks and Julian Assange has played in Media Freedoms and Whistle blowing.
Areas of interest also include the question of whether Government or Telcos or Technology Companies should have the right to access information stored on devices that you own.

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